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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/699,878	11/04/2003	Masaki Kato	H6790.0004/P004	3496
24998	7590	06/05/2006	EXAMINER	
DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP			ANGEBRANNDT, MARTIN J	
2101 L Street, NW			ART UNIT	
Washington, DC 20037			PAPER NUMBER	
			1756	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/699,878	Applicant(s) KATO ET AL.	
	Examiner Martin J. Angebrannt	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 2/2/04, 4/7/04 + 5/6/06
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 14-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/23/04 + 4/7/04</u> | 6) <input type="checkbox"/> Other: _____ |

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1. The response of the applicant to the restriction requirement is noted. The examiner notes that the inventive examples have a Ag alloy layer of 140 nm, but the specification describes a 800-3000 nm thickness for the reflective layer. The latter may be a typographical error as the reflective layers are rarely that thick, but this text also appears in the priority documents.

Copending applications 09/585,380 and 09/569501 have been made of record through the citation of the corresponding EP applications 1058248 and 1058249 cited by the examiner. The declaration/oath submitted by the applicant is clearly that for the instant application based upon the title and the identification of the priority document, although it does not include the serial number of the instant application.

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claim 1-13, drawn to a phase change optical recording medium, classified in class 430, subclass 270.13.
- II. Claims 14-16, drawn to a sputtering target containing Ga, Ge, Sb, Te, classified in class 204, subclass 192.2.
- III. Claims 17-18, drawn to a methods of initializing the medium using a laser at a specific power, classified in class 430, subclass 269.
- IV. Claims 19-20, drawn to recording on the phase change optical recording medium using a specific pulse sequence, classified in class 369, subclass 275.2.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions group I and group II are directed to related articles. The related inventions are distinct if the inventions as claimed do not overlap in scope, i.e., are mutually exclusive; the inventions as claimed are not obvious variants; and the inventions as claimed are either not

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capable of use together or can have a materially different design, mode of operation, function, or effect. See MPEP § 806.05(j). In the instant case, the sputtering target and optical recording media have different designs (substrates), modes of operation and functions.

4. Inventions group I and group III are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case the initialization can be performed by heating or using a flashlamp rather than a laser.

5. Inventions group I and group IV are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product. See MPEP § 806.05(h). In the instant case the medium can be written upon in a different format or a different speed.

6. Inventions II and group III are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions the sputtering target is not an optical recording medium.

7. Inventions II and group IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of

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operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions the sputtering target is not an optical recording medium.

8. Inventions group III and group IV are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different designs, modes of operation, and effects (MPEP § 802.01 and § 806.06). In the instant case, the different inventions one of these is used to ready the medium for recording, while the other is the recording process. They cannot be used together (ie. at the same time).

9. Because these inventions are independent or distinct for the reasons given above and have acquired a separate status in the art in view of their different classification and because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

10. A telephone call was made to Mark Thronson on April 3, 2006 to request an oral election to the above restriction requirement, but did not result in an election being made.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

The election of an invention or species may be made with or without traverse. To reserve a right to petition, the election must be made with traverse. If the reply does not distinctly and specifically point out supposed errors in the restriction requirement, the election shall be treated as an election without traverse.

Should applicant traverse on the ground that the inventions or species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the

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inventions or species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C.103(a) of the other invention.

11. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

12. Applicant's election of group I in the reply filed on May 02, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 14-20 are withdrawn from prosecution.

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

15. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Harigaya et al. '445.

Example 1 has a polycarbonate substrate, a 70 nm ZnS-SiO₂ layer, a 20 nm Ge₅Ga₃Sb₇₁Te₁₈Mg₃ recording layer, a 10 nm ZnS-SiO₂ layer, a 5 nm SiC layer a 140 nm Ag layer and a 5-10 micron UV cured layer. This is then initialized using an 800 mW laser at a velocity of 3 m/s and used at a recording velocity of 8.5 or 17.5 m/s. [0057-0064,0068,0070]. Examples 2-4 and comparative examples are similar, but differ in the composition for the recording layer [0077-0082]. The composition of the Sb may be as high as 85% [0036]. The reflective layer may be Ag alloys [0048]. The upper dielectric layer may have a thickness of preferably 5-20 nm [0044].

16. Claims 1-4,6-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harigaya et al. '445.

It would have been obvious to one skilled in the art to modify the composition used in example 2 by increasing the amount of Sb by a few percent, but below the 85% upper limit, and/or to use a thinner composite dielectric layer, such that the ZnS-SiO₂ layer is 5 nm or less in thickness with a reasonable expectation of forming a useful optical recording medium.

The examiner notes that the term "oxide layer" is held to embrace any layer including an oxide.

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17. Claims 1,3-8 and 12-13 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Yamada et al. '902.

Example 1 has a polycarbonate substrate, a 80 nm ZnS-SiO₂ layer, a 16 nm Ge₃Ga₃Sb₇₀Te₂₀Mn₄ recording layer, a 14 nm ZnS-SiO₂ layer, a 4 nm Si layer a 140 nm Ag layer and a 5-10 micron UV cured layer. This is then initialized using an 850 mW laser at a velocity of 3.5 m/s and used at a recording velocity of 16.75 m/s. [0191-0205] The other examples and Comparative examples 5 and 7 are similar (table 3-1).

18. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yamada et al. '063.

Example 14 has a polycarbonate substrate, a 80 nm ZnS-SiO₂ layer, a 15 nm Ge₂Ga₆Sb₇₀Te₂₂ recording layer, a 10 nm ZnS-SiO₂ layer, a 5 nm SiC layer a 140 nm Ag layer and a 5-10 micron UV cured layer. This is initialized using a laser at an upper velocity of 13.5 m/s and used at a recording velocity of 8.5 or 14 m/s. [0171-0178]. The composition of the Sb may be as high as 85% [0094]. The reflective layer may be Ag alloys [0101-0103]. The upper dielectric layer may have a thickness of preferably 5-45 nm [0100]. The addition of Ag, or Sn is disclosed [0193-0194].

19. Claims 1,3,6-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yamada et al. '236.

Example 2 has a polycarbonate substrate, a 80 nm ZnS-SiO₂ layer, a 16 nm Ge₂Ga₅Sb₇₁Te₁₈ recording layer, a 11 nm ZnS-SiO₂ layer, a 5 nm SiC layer a 140 nm Ag layer and a 5-10 micron UV cured layer. This is then initialized using an 850 mW laser at a velocity of 3 m/s and used at a recording velocity of 16.75 m/s. [0143-0166].

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20. Claims 1,3-8 and 12-13 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Harigaya et al. '346

Examples 4-6 teach polycarbonate substrates coated with a 68 nm ZnS-SiO₂ layer, a 16 nm Ge₃Ga₃Sb_{70.5}Te_{19.5}Mn₄ recording layer, a 10 nm ZnS-SiO₂ layer, a 10 nm Si, SiC, TiO₂ or ZrO₂ layer, a 140 nm Ag layer and a 5 micron UV cured layer. This is then initialized using an 850 mW laser at a velocity of 3.5 m/s and used at a recording velocity of 17.5 m/s. (16/10-65, table 1 in column 17-18). The upper dielectric layer may be 5-50 nm (11/19-25). The Sb content can be as high as 81% (6/40-49).

21. Claims 1-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harigaya et al. '346.

It would have been obvious to one skilled in the art to modify the composition used in examples 4-6 by increasing the amount of Sb by a few percent, but below the 81% upper limit, and/ or to use a thinner composite dielectric layer, such that the ZnS-SiO₂ layer is 5 nm or less in thickness with a reasonable expectation of forming a useful optical recording medium.

The examiner notes that the term "oxide layer" is held to embrace any layer including an oxide.

22. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Yamada et al. EP 1193696.

Example 6 has a polycarbonate substrate, a 80 nm ZnS-SiO₂ layer, a 15 nm In₁Ag₁Ge₁Ga₄Sb₆₉Te₂₄ recording layer, a 10 nm ZnS-SiO₂ layer, a 5 nm SiC layer a 140 nm Ag layer and a UV cured layer. This is initialized using a laser at an upper velocity of 15 m/s and used at a recording velocity of 14.5 m/s. (pages 16-17). The composition of the Sb may be as

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high as 85% [0092]. The reflective layer may be Ag alloys [0099-0101]. The upper dielectric layer may have a thickness 5 and 45 nm [0098]

23. Claims 1-4,6-8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. EP 1193696.

It would have been obvious to one skilled in the art to modify the composition used in example 6 by increasing the amount of Sb by a few percent, but below the 81% upper limit, and/or to use a thinner composite dielectric layer, such that the ZnS-SiO₂ layer is 5 nm or less in thickness with a reasonable expectation of forming a useful optical recording medium.

The examiner notes that the term "oxide layer" is held to embrace any layer including an oxide.

24. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Nobunuki et al. EP 1056077.

Embodiment 9 has a polycarbonate substrate, a 100 nm ZnS-SiO₂ layer, a 20 nm Ge₅Ga₅Sb₆₈Te₂₂ recording layer, a 40 nm ZnS-SiO₂ layer, a 200 nm Ag layer and a 4 micron UV cured layer. [0463-046] This is initialized recorded upon using a laser.

25. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Suzuki et al. JP 2002-096560. (machine translation attached)

Example 4 has a polycarbonate substrate, a 180 nm ZnS-SiO₂ layer, a 20 nm Ag₁Ge₃Ga₆Sb₇₀Te₂₀ recording layer, a 20 nm ZnS-SiO₂ layer, an 120nm Al-Ti layer and a 5-10 micron UV cured layer. [0015, 0019]. The Sb may be 60-85% [0010].

26. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Tashiro et al. JP 2003-257077. (machine translation attached)

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Example 2,8 and 10 has a polycarbonate substrate, a 70 nm ZnS-SiO₂ layer, a 18 nm GeGaSbTe(none,Mg,Dy) recording layer, a 18 nm ZnS-SiO₂ layer, an 140nm Al-Ti layer and a 5-10 micron UV cured layer. [0051, table 1]. Additives include Ag, Sn, Ge, Ga, Dy and Mg [0041].

27. Claims 1,3,4,6-8 and 12-13 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Harigai et al. JP 2003-246140. (machine translation attached)

Example 8 has a polycarbonate substrate, a 80 nm ZnS-SiO₂ layer, a 15 nm GeGaSbTeSn recording layer, a 35 nm ZnS-SiO₂ layer, an 120nm Ag and a 5-10 micron UV cured layer. [0015, table 1].

28. Claims 1-3,6-8 and 12-13 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Muira et al. JP 2002-331758 (machine translation attached).

Example 1 has a polycarbonate substrate, a 60 nm ZnS-SiO₂ layer, a 1.5 nm GaTe layer, a 19 nm Ge_{3.2}Ga_{2.5}Sb₇₉Te_{14.2}In_{1.1} recording layer, a 14 nm ZnS-SiO₂ layer, a 140 nm AlTi layer and a UV cured layer. The other examples and Comparative examples are similar.

29. Claims 1-3,6-8 and 12-13 are rejected under 35 U.S.C. 102(a) as being fully anticipated by Suzuki et al. JP 2002-347349 (machine translation attached).

Example 8 has a polycarbonate substrate, a 60 nm ZnS-SiO₂ layer, a 14 nm Ge₃Ga₅Sb₇₇Te₁₅ recording layer, a 18 nm ZnS-SiO₂ layer, a 140 nm Ag layer and a UV cured layer.[0056,0058] The other examples and Comparative examples are similar.

30. Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harigaya et al. '445 or Yamada et al. EP 1193696, in view of Kunitomo et al. '641 and Takahashi et al. '355.

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Kunitomo et al. '641 teach GeSbTe recording layers with Ga, Sn, Ag, Se as additives [0033-0034]. These allow high speed overwriting. The use of reflective layers having thicknesses of up to 1000 nm is disclosed, although they are usually thinner [0042].

Takahashi et al. '355 teach GeSbTe recording layers with Mn, Sn, and Ag as additives in amounts of less than 5% (7/37-46 and 8/55-59).

In addition to the basis provided above, it would have been obvious to modify the cited examples by adding various additives in amounts of 1-4% to the recording layers, such as the Ag, Sn, Mn, or Se taught by teach GeSbTe recording layers with Ga, Sn, Ag, Se as additives as taught by Kunitomo et al. '641 and Takahashi et al. '355 with a reasonable expectation of gaining the benefits ascribed to this by the references and/or to use thicker reflective layers of up to 1000 nm as taught by Kunitomo et al. '641 with a reasonable expectation of forming a useful optical recording medium.

31. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

32. Claims 1-4,6-8 and 10-13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6790592. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant application and the cited patent include coverage for GeGaSbTeMg based optical recording media.

33. Claims 1-8 and 10-13 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-17 of U.S. Patent No. 6770346. Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant application and the cited patent include coverage for GeGaSbTeMn based optical recording media.

34. Claims 1-4,6-8 and 10-13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 11/130568 (2005/0254410). Although the conflicting claims are not identical, they are not patentably distinct from each other because both the instant application and the cited application include coverage for GeGaSbTeSn based optical recording media.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

35. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nakakuki et al. EP 1096485 and Nonaka et al. EP 1001415 teach barrier/interface layers of oxides or the like adjacent to the recording layer to separate the recording layer from sulfur containing dielectric layers.

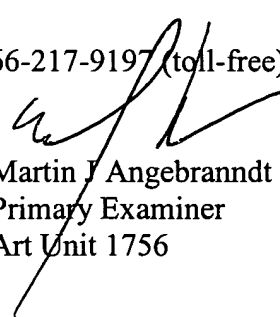
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Yamada et al. JP 2003-091867, Yamada et al. EP 1280142, Miura et al. JP 2003-091871 and Nakamura et al. JP 2003-094819 teaches GeGaSbTe recording media, but are cumulative to the references applied above.

36. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Martin J. Angebranndt
Primary Examiner
Art Unit 1756

05/30/2006